DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Frequently Asked Questions

ACROLEIN

What is ACROLEIN?

Acrolein is a clear or yellow liquid that has a strong, unpleasant smell. It quickly turns into vapor and burns easily. It reacts quickly when exposed to other substances. Acrolein is also called propylene aldehyde, 2-propenal, 2-propen-1-one, prop-2-en-1-al, acraldehyde, acrylaldehyde, acrylic aldehyde, allyl aldehyde, ethylene aldehyde, and aqualine.

Where can acrolein be found and how is it used?

Acrolein enters the air from burning fossil fuels and tobacco smoke. It forms when animal and vegetable fats are heated. It is also a by-product of fires and can be toxic to firefighters.

Acrolein is mostly used to make acrylic acid. It is also used to control plant and algae growth in irrigation canals. Acrolein kills or controls microorganisms and bacteria in oil wells, liquid hydrocarbon fuels, cooling-water towers and water treatment ponds. In paper making, acrolein is used to control slime.

How can people be exposed to acrolein?

You could be exposed to acrolein through:

Breathing acrolein in tobacco smoke or from the burning of plants. Breathing exposure could also happen if you breathe air near running automobiles. If you live near an oil or coal power plant, you may breathe small amounts of acrolein. You could breathe acrolein if you work where it is used to make other chemicals.

Eating small amounts of acrolein in fried foods, cooking oils and roasted coffee.

How does acrolein work and how can it affect my health?

Breathing low levels of acrolein can irritate the nose, nasal cavity, windpipe and voice box. Fluid build up in the lungs can also occur. In cases of severe breathing exposure, death could occur from damage to the lungs and respiratory system.

Eating or drinking acrolein can cause burns to the lips, mouth, throat, esophagus and stomach. You could throw up or have diarrhea. If acrolein gets in the eyes, it can cause severe irritation or burns. Exposure to acrolein vapors can irritate the mucus membranes. Exposure to high levels of acrolein can also affect the central nervous system. Acrolein is named as a possible cancer-causing substance.

How is acrolein poisoning treated?

There are limited treatment options available for acrolein poisoning. Medical personnel are likely to treat the symptoms of poisoning.

What should I do if exposed to acrolein?

Most people are exposed to low levels of acrolein daily. The concentrations found here are unlikely to produce health effects and protective measures are not required. However, for those that work in industries which use acrolein, appropriate health and safety procedures should be followed to limit or prevent accidental exposures.

What factors limit use or exposure to acrolein?

Because acrolein is released from fires, automobile exhaust, smoking tobacco products and other common sources, it is found in almost all parts of our environments. However, it is typically found at levels that would not be expected to produce health effects. The use of higher concentrations of acrolein is limited to the chemical and other industries that use, transport and produce acrolein.

Is there a medical test to show whether I've been exposed to acrolein?

Tests can measure levels of acrolein in the blood and urine. These tests cannot determine if you were exposed to acrolein or if it was produced in the body by the breakdown of other chemicals.

Technical information for acrolein

CAS Number: 107-02-8

Chemical Formula: C_3H_4O

Carcinogenicity (EPA): A4 – Not classifiable as a human carcinogen.

MCL (Drinking Water): None

OSHA PEL: TWA 0.1 ppm (0.25 mg/m_3)

NIOSH REL: TWA 0.1 ppm (0.25 mg/m_3); STEL 0.3 ppm (0.8 mg/m_3)

NIOSH: Immediately Dangerous to Life or Health (IDLH): 2 ppm (4.6 mg/m_3)

References and Sources

U.S. EPA. 2003. *Toxicological Review of Acrolein.* EPA/635/R-03/003.

Agency for Toxic Substance and Disease Registry (ATSDR). 1990. *Toxicity Profile for Acrolein;* Update PB/91/180307/AS, http://www.atsdr.cdc.gov/toxprofiles/tp124.html.

Agency for Toxic Substance and Disease Registry (ATSDR) 2004. *ToxFAQs™ for Acrolein;* [On-line] http://www.atsdr.cdc.gov/tfacts124.html.

U.S. EPA. National Center for Environmental Assessment. 2005. *Toxicity review of Acrolein.* [On-line] http://cfpub1.epa.gov/ncea/cfm/recordisplay.cfm?deid=29116.